The road to a library of the future

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The road to a library of the future
The Strategy and the process

Introduction

Within a period of three years Tilburg University managed not only to build a new library but also to reshape library and information services in an innovative fashion.

In the beginning there was an idea, a vision.
One impetus for developing a vision of a library of the future was the decision by the Dutch Minister of Education to fund the construction of a new library in the centre of the university campus. The Board of Governors of the University regarded this decision as a great opportunity and a essential stimulus for reconsidering the current library situation and the future developments with respect to information technology and to work out a program for a "high-tech documentation, information and communication centre".
When the new library was opened in May 1992, the direction for innovative services was set and various new and exciting facilities could be offered to users campuswide.

Policy strategy in 1989

In May 1989 Tilburg University Press published a basic document for the new library program: "The new library and the development of innovative information services at Tilburg University". This publication was a cooperative effort by the library staff, the staff of the computer centre and specialists from Digital Equipment Corporation and was inspired by the ideas of Leo Wieërs, who was at that moment the university librarian.

Basic assumptions in this document were:

- The forthcoming changes in the scientific *information chain* in which the author will have more facilities both as a consumer and as a producer of new information;
- Close cooperation between the Library and the Computer Centre can have a strong supportive influence in the primary process of academic education and research by making possible an *information-oriented*

workplace, both inside and outside the library building;
- Optimal support can be offered to staff and students in all aspects of the gathering and use of information by focusing on *integration* of library information services with other computing facilities;
- The technical infrastructure should be characterized by flexibility and stability, and should be based on technological *standards and open solutions*;
- Only with the help of other parties can the technological potential in the field of information use be made operational. Because of that, there should be a clear and active preference for *cooperation* both within the university and with other parties: libraries, vendors, publishers and others;
- A strong belief in the potential, the creativity and the *expertise of the own* staff of library and computer centre. These two departments already had a history of succesful partnership and cooperation. The library could take advantage of the experience of various staff members as, starting in 1985, the library had been developing its own applications in specific areas (for example, the design and exploitation of the Excerpta Informatica databases).

The innovative direction

The central element in the concept was personally oriented information management:
- catalogues can be consulted and documents can be requested from the desktop of the individual user;
- electronic information can be retrieved from computerized collections remotely and without the intermediate steps of collecting and sending printed documents;
- integration of the different applications on the desktop computer.

Program description 1989

Based on the policy strategy and the central items seven projects were defined in order to examine the key areas in which innovative courses of action would be taken:

1. *Imaging*
   The long term objective was that the library would provide access to various categories of information in electronic formats using the techniques of scanning and optical character recognition.

The areas of technical and organizational applicability for research were:

- tables of contents (current contents)
- working papaers;
- full text of journal articles;
- old prints;
- maps and topographical pictures.

2. *Publishing*
   The long term objective was that the library would provide interactive desk top publishing facilities for books, magazines, working papers, student reports, and other documents.
   Firstly, a prototype environment would be installed for student level publishing in order to analyze the impact of publishing in an automated environment.

3. *Office Automation*
   This project emphasized an integrated office automation process. Primary applications would be document processing, electronic mail, internal and external (library) databases.

4. *Automated Circulation*
   Alternatives would be analysed to implement automated lending counters in the new library. This implied automated document identification, automated user identification and a link to security processes.

5. *Learning environments*
   The opportunities for tele-education and tele-conferencing would be analyzed.
   The technological impact of interactive learning processes had to be defined in line with the user requirements.

6. *Database development*
   The usage of different database types and different ret-rieval types would be analysed in order to choose an appropriate database management system and a retrieval system for various (full text) databases.

7. *Networking developments*
   The university would have a network in place offering video capture and integration. This integration would be necessary for providing the facilities for the library as mentioned in other projects. FDDI was a prime candidate for investigation in the library context.

Start of projects and initial commitments

In these seven key areas project teams were assembled using staff from the Computer centre and the library, some key personnel from faculties and other university departments, and consultants from Digital Eq.
These teams had to examine the technical requirements and opportunities and had to deliver a project plan with specific benchmarks within six months.

It was of crucial importance was that the Board of Governors and the University Council of Tilburg University acknowledged the program as one of the most important programs for the coming years and gave full support to it.
In June 1989 the Council decided to provide additional budgets to start up the first projects and to allocate a yearly budget for the maintenance and the subsitution of the hardware and software that had to be acquired in order to realize the goals of the program. From the very start, however, it was obvious that all of the important investments for setting up the various pilot projects could only be realized with external funding.

This idea was gradually realized with important financial contributions by the Dutch Department of Education and Science, the Department of Economic Affairs and the Commission of the European Community.
An agreement was made with the Dutch organization for library automation, Pica, which stated that Pica would provide financial support and experts who would take an active part in the program.

A clear and open technology architecture, based on standards and aimed at integration, was viewed as a prerequisite for success. For that reason, cooperation with business and industry was imperative. The University's chief industrial partner was Digital Equipment Corp. Digital supplied a large amount of technological expertise as well as financial means for making the program a success.
But cooperation was not restricted to Digital. Cooperation also took place with such companies like Commodore and Verity and with major publishers such as Elsevier Science Publishers and Wolters Kluwer Academic Publishers.

It was never anyone's intention that these pilot projects be executed in isolation and therefore cooperation was established with other university libraries. A European project in the framework of Comett (The Telephassa project) was realized with the Universitat Autonoma de Barcelona (Spain) and the University of Patras (Greece).

A memorandum of understanding was signed with Carnegie Mellon University (Pittsburgh, USA) in order to exchange ideas and information. A pilot project on Online Contents (with the Royal Library in the Hague) was developed and sponsored by the Department of Economic Affairs.

Through numerous lectures, workshops, seminars and publications, Tilburg University drew international attention to the program for a high-tech library.

Plan of Action. Summer 1990

Based on the reports of the seven project teams a blueprint was published in the summer of 1990 which described the fashion in which information technology would have to be applied in the total program.
A basic characteristic was that the technology architecture had to be able to support multi-vendor offerings, both hardware and software. In any case, it would have to support: VTxxx and X-Window terminals, OS/2, MS-DOS and Macintosh personal computers, VAX/VMS and UNIX.
Another principle was that the architecture had to be based on the use of open standards wherever these were relevant and available.

The Program Management - the management of the library and the computer centre and the project managers - evaluated the results of the seven project teams. The management concluded that there was full agreement on the vision as it had been made explicit in the first publication, but recognized two important problems.
First of all, the actual budget was limited. It was obvious that not all of the possible projects could be launched.
Secondly, the environment - university staff, students, personnel of the library and the computer centre - needed a clear perspective. They had to be convinced, they wanted to see, in a concrete form, that bright ideas could become reality.

For these reasons, the Program Management decided

- to develop -in close cooperation with Digital Equipment - a demonstration model ("Quasi Modo") in order to give users an impression of the impact of the program. For that purpose decicated equipment was installed in a special room at the university. Presentations and demonstrations for university staff and for external visitors could then be organized to visualize the idea of integration of data, texts, and images and to show the new innovative developments that would be possible in a few years.
- to focus on the realization of clearly defined services:

1. to develop an Online Contents database with the content pages of the current scientific journals of the library, using the techniques of scanning and optical character recognition and make it operational for the end-users, by fall 1990.
2. to install a prototype of a publishing shop.
3. to develop a Campus Wide Information System using Digital's VTX.
4. to develop the KUB-Guide as an electronic guide of various local library databases, such as the OPAC, the Excerpta Informatica databases, the Online Contents Database and the Community Information System.
5. to integrate the KUB guide in the Office Automation environment.
6. to start a labeling operation of the entire library collection of 750.000 volumes and to build a Lendomat, a fully self-service circulation system, based on the specifications made by the university.
7. to select database management software according to the available user requirements and functional specifications.
8. to design specifications for the physical network of the new library building.

For each of these topics, project teams were installed in order to develop the deliverables as they were specified in the action plan.
Each project team would have one or more working groups in a specific field. In these teams and groups, library staff worked together with staff from the computer centre. In some cases, staff from other university departments joined the teams as well.

The projects were realized without the use of any official standard method for system development. Functional and technical specifications were set. Subsequently, an experimental prototype was built. This prototype was tested and validated.
Important principles were:

- to buy, whenever possible, what is available on the market;
- look for open solutions preferably based on (international) standards;
- cooperation and communication between members of the project teams through electronic conferencing;
- every single member of a project team should have a task and a responsibility; focus on team spirit;
- regular reporting to the program management.

The experiences in the development of most of these services are described in a number of contributions in this publication.

Realization and implementation

In April 1991, a demonstration of the current status of these projects was organized in the main hall of the university, presenting an overview of what would be available in the new library.

When the new library was opened by the Minister of Education and Science, dr. J. Ritzen, on the 21 of May 1992, several new services became available to the users:

1. *A fully self-service circulation system, the "Lendomat"*, providing users facilities for borrowing, checking out and returning books without assistance by library employees.

2. An *Online Contents Database* giving users information about articles in 1600 journals. This is a service comparable to Current Contents, but mapped on the journal collection of the library. The database is produced using *scanning and optical character recognition.*
   In line with this new service a pilot project was launched in cooperation with Elsevier Science Publishers which offered online Current Awareness Service containing bibliographical information, keywords and abstracts of articles of Elsevier journals to which Tilburg University subscribes.
   For this kind of information an advanced *text retrieval system* (Verity's *TOPIC*) is used which has been made fit for full text document retrieval and enables users to make their own profiles by defining topics.

3. The implementation of *KUBguide*, an online information system, offering transparant network navigation between various databases, such as the online catalogue, bibliographical and abstract databases, and community information.
   Students and faculty are offered open access to the OPACs of other Dutch Pica libraries, and to Internet through the KUBguide system.

4. The realization of *the integrated desktop.*
   The planned integrated services were functioning on *250* PC's in the library and about *1300* other PC's all over campus by Summer 1992. All these PC's have a 80386SX processor, 20 Mhz, 4 Mb memory, super VGA, using MS-Windows.
   In the winter of 1993/1994 the number of studentcomputers in the library was extended from 250 to *450.*
   This broad implementation is unique because it offers a number of different computing services (among others the KUBguide library

databases, Internet-access, Interactive instruction programs, WordPerfect, Harvard Graphics, DBase, SPSS, SAS, FTP, Pmail and Print service etc.) in an integrated form.
In addition to these services, in january 1993 various CD-Roms could be integrated in the campuswide network. This information now is also available on the integrated desktop.

An important advantage of the integrated desktop is that the user can easily implement information from local and remote (library) databases (using the "cut and paste" techniques) into his text, thesis or article. Besides that, information from different sources, inhouse databases, external databases, cd-roms, can be downloaded and printed.

5. The production of the first of 15 interactive instruction modules in the Telephassa project, an EC sponsored Commet program. In september 1993, the full complement of the modules was finished. One of the modules now available treats the use of the integrated desk top.

Succes factors and conclusion

The main success factors of our program to build a new library with new services can be summarized:

1. There was an idea, a strategic plan;
2. A close cooperation between the library and the computer center;
3. Commitment from the Board of Governors of the university;
4. Support from the Dutch Government;
4. Open computer architecture and emphasis on standards;
5. Cooperation with others: Digital Equipment, Pica, Elsevier Science Publishers, other universities such as Carnegie Mellon University (USA), Limerick University (Ireland), De Montfort University (England) and our partners in the Telephassa project, the University of Patras (Greece) and the Autonomous University of Barcelona (Spain).
6. The most important success factor was however the people; staff members who worked with enthusiasm and expertise to create a new library and new services.

These factors were the basis for success and can also be the basis for work in the future as it is quite obvious that innovation cannot stop once a window to the future has been opened.
Because there is a vision, accepted by the University Board as a strategic goal, new projects can be started in line with the overall strategy.

In the years to come an emphasis will be placed on
- the improvement of the user interface;
- knowledge navigation;
- electronic document delivery;
- full text databases;
- the creation of a coloured image bank.

It is already known that continuous innovation can only work when the maintenance and consolidation of the new services that are put into place, is guaranteed and guarded. In this respect a lot of attention has to be given to user support and user instruction.
The most essential factor, however, is the need to strengthen the relationship of the library with faculty in order to integrate new information services into teaching and research. This central goal requires a more pro-active role of the library and the information specialists who act as liaison officers for the faculty.

It is obvious that new developments with respect to information technology will change the information cycle dramatically. Users will be able to access information, bibliographical databases but also primary sources wherever they are located without visiting a library. The monopoly of the library as the gateway to information is under pressure.
Libraries have to face these developments in an active fashion. They have to anticipate these developments and make full use of the strengths of libraries and librarians: the disclosure of (online) information, the packaging of information coming from various sources, the development of tailor-made services, and the support of users in solving their information problems.

Tilburg University has deliberately decided to follow this active user-oriented strategy.